Howard Gardner's Theory of Multiple Intelligences and the Elementary Classroom

An Honors Thesis (HONR 499)

By

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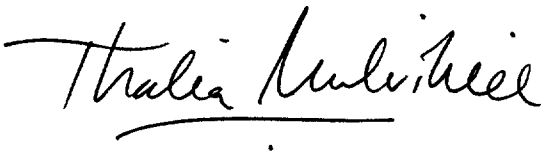

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I thank my friends and family who encouraged me to finish my thesis in a timely-as-could-be manner.

I also thank God, because through prayer, He led me to keep and omit the information according to my beliefs. My religious beliefs are different than those of Gardner, and I realized that throughout my preparation of my thesis. I was able to use his theory of multiple intelligences but ignore the differences of beliefs.

Abstract

Child psychology is one subject elementary education majors take during their years of college. Howard Gardner, a researcher in child psychology, has studied intelligences for at least two decades in Project Zero at Harvard University. Gardner states in his theory that there is not only one intelligence (linguistics and logistics), but multiple intelligences, at least eight.

I have proposed two questions to answer in my thesis: 1) How can a teacher use the theory of multiple intelligences to reach students whose strengths are not so-called "academic intelligences?" and 2) How can I use what Howard Gardner has learned by working with exceptional children to apply it to a wide variety of students in one classroom? I have written about Howard Gardner and his theory of multiple intelligences. I have also discussed several teaching styles that Gardner, other researchers, and teachers have helped create that would accommodate many of these intelligences. By using the information, I have described several ways I could use his theory in my class. Finally, I have developed possible lesson plans to utilize these multiple intelligences.

I plan to use this information in my classroom, and I hope that other teachers can use this information, too. Some students do not excel in linguistic or logical-mathematical skills, but in other areas, or intelligences, according to Gardner. I hope to learn more about his theory and apply what I believe is true and logical to my field as a teacher to help students excel and succeed.

Howard Gardner's Theory of Multiple Intelligences and the Elementary Classroom

Child psychology is one of many subjects a pre-service teacher must take during his or her time preparing to be a teacher. This sort of class includes reading about many theorists of development, growth, and education, including Jean Piaget, Erick Erikson, Lev Vygotsky, Jerome Bruner, Noam Chomsky, and John Dewey (Santrock, 1996). More recently, however, another man has come into the field of child psychology. Howard Gardner has studied intelligences for the last fifteen years in what is called Project Zero at Harvard University where he is an adjunct professor of Psychology. He agrees that people have different degrees and areas of intelligence, but does not stop there. Gardner states in his theory that there is not one, but multiple, intelligences. He claims that there are at least eight, but does not deny that there may be more.

I have been intrigued with the theory of multiple intelligences since I took my first child psychology classes at Ball State University and have wanted to find a way to encourage children in my classroom someday to help students express these intelligences. I would like to direct my thesis to pre-service and in-service teachers who want to learn to teach their children with multiple intelligences, not simply logical-mathematical and linguistic intelligences (mathematics and language skills), the traditional "academic" areas. I plan to discuss Howard Gardner and his theory pertaining to two specialized programs, as well as to public school programs and adult education programs. Although I am an

elementary pre-service teacher, it is my hope that teachers for all age levels from preschool through adult education may use this information to benefit their classroom students. I want to devise several methods, compatible with Gardner's theory, to accommodate these intelligences.

I have also developed several example lesson plans exemplifying how multiple intelligences may be taught within the classroom. Some of these lessons have been taught within classrooms with which I have worked during my student teaching and other pre-service field opportunities. Other examples are my ideal lessons to show how to integrate other intelligences naturally while teaching curriculum using specific intelligences, such as using music to compliment a linguistic lesson of poetry.

I pose two questions as I expand on this thesis. These questions deal with how to take a theory of science and use it in a real classroom. These types of questions have been asked by Gardner and teachers who, like me, have wanted to use his ideas in the classroom to improve student strengths in standard academic achievement.

How can a teacher use the theory of multiple intelligences to reach students whose strengths are not so-called "academic intelligences?" I propose that using his theory and composing a program that promotes other intelligences will help students in all areas, since students may use their intelligences in their strongest areas to help strengthen their weaker areas.

How can I take what Howard Gardner has learned working with exceptional children (mentally retarded, autistic, gifted, and otherwise non-

average children) and apply it to a wide variety of students in one classroom? Research suggests that all people have strong, average, and weak abilities, in comparison either to themselves or other peers. Research also shows that students help each other and they help themselves using other intelligences to help them learn areas in which they have problems.

For two decades, Howard Gardner has studied child psychology and how the mind-brain works. In 1983, Gardner published his book Frames of Mind: The Theory in Practice. He explained in great detail his study of children, the mind-brain connection, and introduced his theory of multiple intelligences. As he anticipated, he received a large amount of criticism (Gardner, 1999), but after almost twenty years, his theory has held strong. Many people have realized its importance and have begun to believe his theory and some have begun to use its applications in their classrooms.

Gardner studied many children, most of whom were exceptional in one area. Many of these were mentally retarded or autistic (Gardner, 1983). Because these children had great weaknesses in many areas but had great strengths in others, Gardner did not accept the theory of a general intelligence as proposed by Albert Binet and other great theorists of intelligence. Gardner thought that there were not just one, but many ways people could be intelligent. He did not stop at saying those people were talented in specific areas, but also said that there were multiple intelligences and these people had great strengths

in these intelligences, even if they did not have strengths in other intelligences. (Gardner, 1983).

Before proceeding, I would like to introduce Gardner's definition of intelligence. Historically, intelligence has been defined as a single property of capacity to acquire and apply knowledge (Gardner, Theory of Multiple Intelligences, p. x, 1993; Heritage Dictionary, 1993). Gardner, however, defines it as "the ability to solve problems, or to create products, that are valued within one or more cultural settings (Gardner, Theory of Multiple Intelligences p. x, 1993)." Contrary to some classic definitions of intelligence, he also mentions that intelligences go beyond one's body; intelligences are shown by the problems one solves: "My intelligence does not stop at my skin; rather it encompasses my tools (paper, pencil, computer,), and my network of associates (office mates, professional colleagues, others whom I can phone or to whom I can dispatch electronic messages) (Gardner, Theory of Multiple Intelligences, 1993, p. xiii)." He believes that standardized tests do not show the degree of intelligence, but that real-life incidents to solve problems show these degrees of intelligences.

Gardner has two ways that he discusses intelligences. For the majority of his writing, he discusses them as multiple ways to solve problems as defined above. However, he also discusses them as "biological potentials (Gardner, Theory in Practice, p. 9, 1993)," which means that they are channels that help the student more easily learn. Gardner stated that intelligences may change over time because of environmental changes. However, he also says that the potential of forming the intelligence to a great extent is different in all people. In

very little of his writing does he define multiple intelligences as those "biological potentials," or areas where students may potentially mold an intelligence. He states that "not all people have the same interests and abilities; not all of us learn the same way (Gardner, Theory in Practice, p. 10, 1993)." Although he usually defines intelligence as the ability to solve problems and says that these intelligences may be strengthened or weakened by the environment, people have the potential to have certain intelligences (Gardner, Theory in Practice, 1993).

Howard Gardner has also mentioned that he is careful to define intelligence as not to put any one culture or ethnic group to a disadvantage (Chen, 1998). Unfortunately, "[traditional] intelligence tests are/ culturally biased, requiring a familiarity with the vocabulary, phrasing, and social conventions of the majority culture (Chen, pp. 4, 5, 1998)." His studies also encourage those students who are not usually considered gifted to be entered into gifted and talented programs (Chen, 1998).

Gardner believes that there is more than one area of intelligence, such as suggested by Alfred Binet (Gardner, 1983) by his Intelligence Quotient test, but at least eight intelligences, and those intelligences are equally important. His theory of multiple intelligences states that there is not one, but many different intelligences. There are at least eight of these categories Gardner decided to call "intelligences (Carvin, 2001)." The two intelligences most people consider to be one general intelligence are linguistic (language) and logical-mathematical, but there are at least six more. These include musical, bodily-kinesthetic, spatial,

interpersonal, intrapersonal, and the most recently added, naturalist, intelligences.

Some people believe that general intelligence tests actually test multiple intelligences, or the intelligences that Gardner has defined. However, Gardner disputes that statement by saying that even the wording of a test "question can tip off the test takers (Gardner, Theory of Multiple Intelligences, p. xx, 1993)." He believes that general intelligence tests, although they should be testing other skills or intelligences, largely test language and logic skills, such as giving a written test on music to test music performance skills. The test does not necessarily assess whether a student knows the notes or chords, but assesses the student's ability to read the question and perhaps find key words within the sentences to find the correct answers.

Howard Gardner first defined his seven intelligences in Frames of Mind: The Theory in Practice (1983). He later added an eighth intelligence. This last intelligence is found in his later writings and in writings about Howard Gardner, such as his articles and other peoples' articles in magazines and on the Internet. Because the naturalist intelligence is newer than the first seven, many sources have little on this intelligence. However, there is still quite a bit of information on the naturalist intelligence. Howard Gardner has defined his intelligences in his writing.

Howard Gardner refers to language as linguistic intelligence. This, along with logical-mathematical intelligence, is what comprises most intelligence or

standardized tests, whether advertantly or not. Students who understand written language well have a strength in linguistic intelligence. He also states that poetry is the highest level of "sensitivity" to the linguistic intelligence (Key Learning Community, "Theories," 2001). Gardner stresses, though, that because this is one of the two intelligences on which school academics focus, we should be careful not to see this and logical-mathematical intelligences as the most important two intelligences. He stresses that all eight are equally important and the linguistic intelligence is simply one of those eight.

Logical-mathematical intelligence is one that people easily compute numbers and who see things logically very easily. People who have strengths in the logical-mathematical intelligence easily understand abstraction or science and logic. This intelligence includes subjects such as mathematics, science, and social science. They can easily understand logic and mathematics. Mathematicians and chemists are two examples of people who may excel in this intelligence (Key Learning Community, "Theories," 2001).

Students with musical intelligence are those who "have the ability to think in sound, to hear without auditory stimuli," or who are "able to manipulate and combine elements of music without necessarily expressing them on a musical instrument (Key Learning Community, "Theories," 2001)." Those individuals have an uncanny ability to understand sound and music, with or without it being heard. He used a young violinist, Yehudi Menuhin, as an example of musical intelligence. At three years old, he decided he wanted to become a violinist after hearing a great performer, Louis Persinger, of the San Fransisco Orchestra. He

insisted to his parents he wanted a violin and Mr. Persinger as a teacher for his birthday, and he did get both. Within seven years, the boy was an international performer (Carvin, "Musical Intelligence," 2001). Individuals with great musical abilities have strength in musical intelligence.

Bodily-kinesthetic intelligence is the ability of movement. These males and females have heightened abilities of balance, control, agility, and grace. Dancers, gymnasts, athletes, jugglers, and surgeons are examples of professionals who may have a higher bodily-kinesthetic intelligence than other people. A child who does extremely well playing basketball in gym class may be intelligent jn this area. Athlete greats like Michael Jordan (Carvin, 2001) who have proven themselves to be the best in their leagues probably have a very high bodily-kinesthetic intelligence. Bodily-kinesthetic intelligence is the ability of movement.

Spatial intelligence is the ability to understand the world around oneself or to understand three-dimensional shapes without seeing them. These people understand puzzles, shapes, our earth as a sphere, and the constellations of stars above us. Navigators, topologists, architects, and even great chess players have a heightened sense of spatial intelligence (Key Learning Center, "Theories," 2001, Carvin, "Spatial Intelligence," 2001). However, as Gardner states in Frames of Mind: The Theory of Multiple Intelligences, (p. xvi, 1993) the second volume of his Frames of Mind books, "there is no 'pure' spatial intelligence: instead, there is spatial intelligence as expressed in a child's solutions, route finding, block building, or basketball passing. By the same token, adults do not

exhibit their spatial intelligence directly, but are more or less proficient chess players or artists or geometricians (p. xvi, 1993)." In other words, we see people's spatial intelligence through other intelligences such as linguistic, bodily-kinesthetic, or logical-mathematical intelligences. As we have learned in our education classes, we cannot measure understanding without having it displayed in words, numbers, art, or motion. People who understand the world around them more easily than most people have a finely tuned spatial intelligence.

Interpersonal intelligence is the ability to "notice and make distinctions among other individuals (Key, 2001)." These people are extremely aware of the differences among other people. Interpersonal intelligence is that which is shown when people are very able to interact with and understand others and interpret their behavior and "'contrasts in their moods, temperaments, motivations, and intentions (Carvin, 2001, quoting Gardner).'" An adult realizing the true emotions of another, a very sociable teenager, or a child who is eager to play with new children may all be examples of people with an interpersonal intelligence. Interpersonal intelligence is the ability to understand people well and to interact with others.

Intrapersonal intelligence is the understanding of oneself. This intelligence helps one understand one's feelings to guide one's own behavior. A heightened sense of intrapersonal intelligence helps one feel better about oneself (Key Learning Center, 2001; Carvin, 2001). Gardner's research has shown that people with a weakness of this intelligence leads to low self-esteem. Autistic children, according to Gardner, have lower intrapersonal intelligence and have

lower self-esteem than most people because they cannot understand that they are important to the community. Intrapersonal intelligence is not seen in itself; it needs help from other intelligences, such as linguistic, musical, or spatial to show feeling in poetry, song, or art (Carvin, 2001). Intrapersonal intelligence is the ability to understand one's feelings and control one's behaviors.

In some books, such as Frames of Mind: The Theory of Multiple Intelligences, (Gardner, 1993), Gardner discusses both intrapersonal and interpersonal intelligences together, calling them personal intelligences. They are similar in that they are both intelligences that assist people in understanding how people feel, but one is the ability to understand oneself (intrapersonal intelligence) while the other is the ability to understand others (interpersonal intelligence). Although they are closely related, Gardner has decided to define them as two separate intelligences.

Recently, Gardner added an eighth intelligence that he named the naturalist intelligence. People with a strengthened naturalist intelligence understand the natural world around them. Gatherers and hunters of long ago had to have a sense of naturalist intelligence to find edible sources of food. Now, we see these people who work with nature and weather, such as forest rangers and meteorologists, may have a keen sense of naturalist intelligence. Naturalist intelligence is the "ability to identify and classify patterns in nature (Carvin, "Naturalist Intelligence," 2001)."

Howard Gardner has also studied in great detail the mind-brain connection. In this, he is interested with what the brain is, which parts of the brain activate which senses and intelligences, and how that those intelligences and senses process the information to make our thoughts (our mind). Because this is a very psychological aspect of his theory (and confusing aspect, at least to people without psychological backgrounds), I have decided not to talk much about it. As a teacher, this study is very theoretical and is very difficult to realize how this raw information may fit into a classroom easily. I will leave that up to the psychologists to discuss! After psychologists have made it more feasible to use in a realistic setting, teachers may have use for the information. However, for the time, I have chosen not to discuss the mind-brain connection very much.

As I mentioned earlier, Howard Gardner is a professor at Harvard University, but he also has another position at this prestigious university. He has worked with Project Zero for fifteen years and is currently the Chairman of the Steering Committee of the program. Project Zero is an educational research group whose mission is to "understand and enhance learning, thinking, and creativity in the arts, as well as humanistic and scientific disciplines, at the individual and institutional levels (President of Harvard, "Project Zero," 2000)." They study learning processes of children and seek ways to help children learn, reflect, and understand all disciplines of school, especially arts. In this, Howard Gardner has continued developing his theory of multiple intelligences with the help of the committee. Gardner has been able to help put his theory to work in

several Project Zero-based programs (President of Harvard, 2000, "Gardner," updated 2001) that I will discuss later in this thesis.

Gardner has written eighteen books and several hundred articles, many of which are dedicated to the theory of multiple intelligences, or what is now commonly known as the "MI theory (Gardner Theory of Multiple Intelligences, p. ix, 1993, Chen, p. 12, 1998)." He has written many of these books during the time he has been involved with Project Zero at Harvard University. His theory has gained a great deal of recognition and he has gained a large amount of respect and many awards and honors during these last fifteen years. In 1983 when he published Frames of Mind: The Theory in Practice, he received quite a bit of criticism. Many said his theory was a fad and would disappear quickly (Gardner 1983, Chen 1998). In 2000, he was awarded a Guggenheim Fellowship, showing that his theory has proven the test of time, twenty years (President of Harvard, 2000). Contrary to pessimistic teachers, peer researchers, and other critics, this does not seem to be a fad and continues to hold respect by many (Chen, p. 119, 1998).

Howard Gardner addressed the question if he had changed his mind at all in the first ten years of his theory. He said he firmly stands on the first seven intelligences and would not change them. However, he does not doubt that there may be more. In fact, recently, he added his eighth, naturalist intelligence and speculated that there might be a ninth, a spiritual intelligence. He has also stated that he has slightly changed the meaning of intrapersonal intelligence from "'feeling life'" to the importance of high self-esteem and making daily decisions on

one's life. However, basically, he has decided not to tamper with the original seven intelligences (Gardner, Theory of Multiple Intelligences, p. xviii, 1993).

I have been interested in how to take a theory, as Gardner admits (that it is simply a theory), and try to effectively use it in my future classroom to improve student learning. I should not have been so amazed, then, to see that there were already many programs established around the United States whose instigators have, like me, wanted to use this information to better their classrooms and teaching.

One such program is called Spectrum, initiated by Project Zero. Project Spectrum is a preschool program using an approach greatly influenced by the theory of multiple intelligences. Spectrum classrooms are "richly stocked with materials to stimulate several intelligences, as if a children's museum – with its scientific displays, live animals, artistic and musical materials, games and puzzles – had been transported into a nursery or kindergarten class (Gardner, Disciplined Mind, p. 104, 1993)."

Project Spectrum was developed around two main theories about intelligences and teaching children. One, of course was Howard Gardner's theory of multiple intelligences. The other was David Henry Feldman's nonuniversal theory. Feldman believes that although there are areas, called universal domains, there are domains or areas of knowledge, that one must learn through a set of formal teaching. In other words, one cannot simply learn it by living an everyday life or "picking it up somewhere." Feldman also believes that

not everyone can learn or wants to learn these nonuniversal domains. His work deals with what he calls "domains," which are areas of knowledge. Feldman and Gardner have worked together to understand how children learn in Project Spectrum through Tufts and Harvard Universities, respectively.

In Project Spectrum's classrooms, researchers and teachers have found domains easier to assess than the eight intelligences. "Although we [the researchers and schools] used the [original] seven for our starting point, we soon digressed from addressing 'intelligences' per se to tapping abilities in the context of domains, or 'bodies of knowledge, explored in a preschool class (Chen, p. 22, 1998)." However, they use other intelligences and other children to improve those weakest areas of students. For their sake, the researchers and teachers assess domains but used knowledge about the eight intelligences to help strengthen students in nonacademic domains.

Spectrum uses realistic activities that specify many aspects of different intelligences. Students may play with blocks, work with others at the sand table, or dance to music, but activities are designed differently than other nurseries or day cares. In teacher-led activities, students are encouraged to move freely to express themselves in the domain of movement to show bodily-kinesthetic intelligence. Students may also have activities to disassemble and reassemble machinery in the domain of construction and mechanics to show spatial intelligence. Students are also realistically assessed after the students have been familiarized with the activities and materials. Students are asked many questions and assessed according to their answers and their actions.

Disciplines in Project Spectrum are based on, but are not exactly, the intelligences Gardner had described (Chen, p. 22, 1998). Instead, these activities are based on what they call "domains, or bodies of knowledge" from Feldman's nonuniversal theory. Students are assessed on activities they perform, and in that, they can see children's strengths (and weaknesses). From those strengths, they can divide their strengths into the multiple intelligences of the children.

One such activity described in Building on Children's Strengths: The Experience of Project Spectrum, (Chen, p. 18, 1998) is about a creative movement class for three- and four-year-olds. Music is played and students are encouraged to move expressively in their own styles. Teachers and observers watch if, how, and to what extent a child moves. A specific child, as the author mentioned, moved quickly, "shaking her head and arms in time to the beat (Chen, p. 18, 1998)." She moved more slowly, but still with the beat, when the music slowed. She also continued to move when others would no longer dance. The observer noted her rhythmic and bodily abilities. According to this and other activity assessments, the observer could state that the little girl has strengths in musical and bodily-kinesthetic abilities. This, in a regular school, would not be used to label her, but to use these strengths to strengthen her weakest intelligences. (This Project Spectrum school is more interested in assessment and observation than teaching information to students. In a regular school, this information would be used to help her strengthen her weakest intelligences, but this Project Spectrum school concentrates on assessment, not necessarily

improvement.) Students are observed and assessed according to their strongest domains and intelligences.

Project Spectrum is much like other programs being used in schools today. One such program is called the Montessori Method introduced by Maria Montessori in 1964. In a Montessori school, centers are readily available to students to learn sensory, didactic, and practical life skills. Maria Montessori created an assembly of "materials to increase children's sensitivity to their environment and to encourage their ability to make sense of their experience (Chen, p. 29, 1998)." Students learn realistically within the centers how to do many things children need to learn to do by the time they enter elementary school, such as learning that eyes are for seeing, preparing to learn reading, and tying one's shoes (Chen, pp. 29, 30, 1998).

The difference between Montessori and Spectrum programs are that Montessori programs are designed to be "self-correcting," as Spectrum programs are to be very open-ended. Instead of having an exact way to use the materials, students are encouraged to creatively use materials. Spectrum's goal is not to show students the correct way, but for the students to show their strengths.

Project Spectrum has two main goals. One of these is an alternative assessment program to standard tests. It is used to assess students in nontraditional and realistic techniques. The second goal for Spectrum is that of a school filled with activities and materials to be used open-endedly for students to learn. It can also be seen as "[bringing] about important changes in the understanding of children's growth, appreciation of children's strengths, and the

creation of an optimal education atmosphere for children's learning (President of Harvard, "Project Spectrum," 2000)." Schools may use one or both parts of Spectrum.

Students are encouraged to use their surroundings to learn. Spectrum is even more closely related to project-based learning, a program based on Piaget's and Dewey's constructivist theory, than it is to Montessori schools. In project-based learning, projects "provide a real-life context for learning and practicing language, math, and other skills (Chen, p. 31, 1998)." A lesson in a project-based learning for first grade may be that of what makes a plant a plant and an animal an animal. First, a student or teacher may notice a plant in the room, mention it to the class, and then ask what makes it a plant. In a project-based program, students would research what makes a plant a plant and an animal an animal. Students would do an in-depth research to discover the information before presenting it as information to the class. The difference between Spectrum and project-based learning is that Spectrum highlights the disciplines (which, in Spectrum, are loosely based on multiple intelligences) while project-based learning does not. Spectrum also may not go into so much detail in discovering what makes plants and animals different (Chen, 1998).

Activities in Project Spectrum are to be realistic and able to be used in the real world. For example, one activity is that of disassembling and reassembling a food grinder (Chen, 1998). The purpose of this activity was to assess mechanical and constructive abilities. Students who can easily disassemble and

reassemble the piece understand how things are put together very well; they have mechanic and constructive strengths, which would be spatial intelligence.

Students who do not show academic intelligence (linguistic and logical-mathematical) might show strengths in other areas such as spatial intelligences from realistic but traditionally nonacademic areas. Students who cannot add two numbers but can completely reassemble a food grinder are very intelligent, but not in academic areas. If these students were to have been enrolled in other preschools where nonacademic intelligences were not regularly assessed, teachers would have no idea the capabilities these children have.

In a Project Spectrum classroom, there are centers for children, and for each center, an observer may test the students after they have been acquainted with the materials. Plenty of materials, centers, and activities are available to the students. Students may either choose or sign up, depending on the school, to go to an activity. These may be a block center, a sand table, or a center with simple machines, such as the food grinder (as mentioned earlier). Students may be familiarized with the materials when they enter the center. Students are individually based, such as the individual assessments based on a food grinder. The example given by Chen (p. 26, 1998), a student will be called to go to the center. The adult will ask the child what he thinks it is. The child may know it is a simple machine, but has no idea what type of simple machine. The adult will then introduce the child to the materials and explain the procedure, which is to look at it, disassemble it, and to reassemble it exactly as it was before taking it apart. The child will have an opportunity to complete the activity individually.

However, if he or she needs help, the adult may do whatever is necessary to help.

One point that is stressed with Project Spectrum is that children do not have to be excellent in everything; to the contrary, Spectrum's goal is to find areas or intelligences in which students excel, are average, and are weak. Teachers can take that information and use it to help students. If a child is not specifically strong in one area, a teacher can encourage the student through another area. Students may also encourage students to strengthen weaker areas. For example, if a child cannot express himself in words, but can easily disassemble and reassemble a food grinder, he can dictate to another student who is having difficulty with the activity. If he still has difficulty, a teacher can help dictate to the second child, but the child discusses something he knows very well how to do. Spectrum stresses that people excel in some intelligences while they are weaker in others, whether comparing them to other peers or to the rest of their own intelligences.

In short, Project Spectrum is a scientific study in the context of a preschool. The researchers of Project Zero have used this preschool to assess children's intelligences in realistic settings. Teachers and observers use many different activities to assess and to observe student intelligences. These assessments do not align perfectly with the eight multiple intelligences, but they do somewhat coincide with them. Activities are based on "context of domains," or "bodies of knowledge (Chen, p. 22, 1998)." Spectrum schools are designed so that a child learns knowledge and explores new ideas openly but they are not

expected to excel in all areas. Students are encouraged to use their strengths to strengthen their weakest areas. Project Spectrum is a program for Project Zero to study and learn about multiple intelligences of children.

Many schools have adopted the Spectrum thought, even if they are not part of the Spectrum network. Some of these are schools that have worked with Project Spectrum for research-sake. Others are schools or teachers who have decided to start their own programs and have asked Project Zero and Project Spectrum for guidance. More schools have adopted a multiple intelligences teaching style. In fact, one source said that over two hundred schools had adopted a multiple intelligences approach by 1998. Some schools have adopted a Spectrum approach or multiple intelligences teaching style.

Eliot Pearson Children's School, a laboratory school affiliated with Eliot Pearson Department of Child Development at Tuff's University, in Medford, Massachusetts, was one of the first locations for Project Spectrum for Project Zero. Much of the information about Spectrum is from the Eliot Pearson research of Project Spectrum. The school utilized the assessment plans of the project as well as the activities to understand what their students' strengths and weaknesses were. Researchers have learned a great deal by assessing these children and these children have learned a great deal of realistic life skills in these classes through Project Spectrum.

Another school system that was used for testing Project Spectrum was Somerville public schools in Somerville, Massachusetts. Somerville public

schools, as with many schools, wanted to improve the education and learning at school. Researchers and teachers asked two questions. The first was, "Do we agree that every child can learn and wants to succeed in school and in life (Chen, p. 48, 1998)?" The second, if that question's answer was yes, was, "Are there effective ways to approach our youngsters, particularly those who come from back/grounds that do not match our own and who do not respond to our standard teaching techniques (Chen, pp. 48-49, 1998)?" Researchers and teachers used these two questions to develop a Project Spectrum program for a public school. Their dilemma, at first, was that they initially had an individually based preschool program that did not put any more emphasis on academic subjects than nonacademic subjects; they needed a program that would work well for larger groups of older students in practical, public schools (normal elementary schools). They set objectives and finally decided to introduce a multiple intelligences theory-based program.

The four teachers had their individual teaching styles to initiate the program, but their basic procedures were the same. Over a period of three months, they began introducing several learning centers. There would be eight learning centers at a time, one for each intelligence. Through this, students gained self-esteem, showed their strengths, and helped each other in areas where one excelled and one struggled. After that, teachers were able to identify students' strengths, not just academically, but throughout all eight intelligences. Finally, teachers were able to use the information of strengths and weaknesses to help each child gain understanding for each of their academic weaknesses.

One teacher used a cooperative approach whereas students would assist others in needed areas. Students also used their own strengths in some areas to assist themselves in other intelligence areas.

They also had to discover how to take the information gained and apply that to academic procedures. However, the teachers discovered that the same process that occurred during the center times could occur for academic times. Students helped each other and helped themselves through other areas to improve their academic work. The four Somerville teachers that volunteered were very happy to learn new approaches to strengthen their children's weaknesses.

The researchers at Project Spectrum imagined a realistic setting, not in a classroom, but in a real-life setting, that students could practice intelligences and strengthen their intelligences by those things around them. In such a case, settings would be realistic and students would learn about real living environments. For this, Project Spectrum decided to cooperatively build a curriculum using Boston's Children's Museum and a Somerville program called SMILE (Sequentially Monitored Individualized Learning Environments) in what would be much like a Spectrum preschool (Chen, 1998). For this project, there were three places students would learn. In all three places, students would learn related information through multiple intelligences. First, students would learn information at school through kits created by Project Spectrum's researchers. These kits were full of information based around one basic theme but drew from several intelligences (Chen, p. 76, 1998). Then, students would have several

field trips to the museum. The museum had many exhibits about the topic being taught. Students would also have kits that went home to parents and families so that students could learn information with their parents at home. These kits were guided so that parents would understand the information. The museum staff also visited the school to help associate the three sources of information and learning (museum, school, and home). Parents were also encouraged to see the museum visits as learning opportunities. Parents were also encouraged to go to the museum to see students learning away from the school setting. The museum and the kits for school and for home all used different intelligences. At the museum, workers focused on spatial, interpersonal, logical-mathematical, and bodily-kinesthetic intelligences through many activities, while at school, teachers focused on bodily-kinesthetic, spatial, linguistic, and musical intelligences. At home, students focused on spatial, interpersonal, and linguistic intelligences. SMILE and the Children's Museum in Boston worked together to create a Spectrum program to make curriculum more real to students by using multiple intelligences.

In short, Project Spectrum developed a program between the Children's Museum in Boston and the nearby school program called SMILE (Sequentially Monitored Individualized Learning Environments). Students learned, broadening and strengthening multiple intelligences through activities from the Children's Museum, at school, and at home. Activities encouraged students to think using many, if not all of the intelligences.

Many teachers and school districts have decided to adopt their own versions of Project Spectrum's programs. These were not initiated by Project Spectrum researchers, but by teachers themselves. Some entire school districts, as well as single teachers or groups of teachers have decided to try multiple intelligences program in their schools. These specific schools had the initiative to put into action a program to improve student education. They called upon the expertise of Project Spectrum to help the school systems and teachers. Teachers and school systems have taken it upon themselves to better their students' education.

Bruce Campbell, a teacher from Seattle, Washington, decided after hearing Howard Gardner speak, that if he used a multiple intelligences approach in his classroom, students would learn much more than they were at the time. Before working with multiple intelligences, he taught thematic units. Campbell decided to keep using thematic units, but he added the use of learning centers in order to enrich student learning through multiple intelligences. Mr. Campbell taught a fifteen-minute lesson and had students circulate through learning centers daily. Through practice, time, and adjustments, Campbell created a system of meaningful learning centers to coincide with the lessons. Students then presented information in groups to the class they had learned in the centers.

Bruce Campbell gave an example of his centers. Mr. Campbell might decide teach a unit on photosynthesis. If he did, there may be groups of three or four at each center. Centers would be geared toward each intelligence. One center may be that students paint a watercolor of the process of photosynthesis.

This would be an example of visual skills, or the spatial intelligence. Another example would be that students are required to make a song about the steps involved in the process of photosynthesis. This would be an example of the musical intelligence. Another example of a center would be to meet in a group to discuss the chloroplasts and their role in photosynthesis, followed by a discussion of how the changes in photosynthesis would relate to the changes in a human body. This would be an example of interpersonal intelligence. Following that, students would proceed to still another center to reflectively write in a journal to think about how oneself changes over time to compare it with the process of photosynthesis. Campbell was quoted as saying that at first, he did "'some trivial activities that were hands on, interactive, and fun, but not necessarily meaningful (Chen, p. 112, 1998),'" but after practicing using multiple intelligences within the classroom, he improved his strategies and his activities for learning centers. Over time, he enhanced his centers and the learning that took place at them. Students were taught at centers and activities to be educated through multiple intelligences.

Bruce Campbell used the basic, raw form of the theory of multiple intelligences to teach his class in a better way. He developed his own instructional strategies through learning centers and activities to activate multiple intelligences to further educate children in his class. Some students excelled in some areas while some excelled in others. Students were able to learn in many styles so that students could learn in the styles that they felt they understood the best. Students were not limited to linguistic and mathematical-logical

intelligences, but could expand their understanding of the curriculum through other intelligences such as spatial, musical, interpersonal, and intrapersonal intelligences.

At Fuller School in Gloucester, Massachusetts, a school teaches some classes through the theory of multiple intelligences. As they call it, a "'school within a school (Chen, p. 114, 1998),'" volunteer teachers from kindergarten through fifth grade have joined the program. The district superintendent had heard of multiple intelligences. The school studied them and decided that the theory matched the schools beliefs and practices. The goal of the school was to teach students the curriculum they needed to know in a fashion that students would understand and by method that would teach through many different domains so that all children would learn, no matter what their strength.

Students were to take responsibility for their own learning and teachers aimed to teach them in a variety of ways so that they would learn. They collaborated with Project Spectrum to introduce a technique to teach with the understanding of multiple intelligences. Teachers worked together on a team to introduce the program to students. Teachers began to teach in the style of multiple intelligences, expecting students to learn in a different fashion than simply worksheets and homework. Students learn, think, collaborate with classmates, and create projects. Students create games, projects, and activities to further their own understanding. Students present multiple domains in their presentations, such as music, art, and, dance poetry, not simply a rhetoric of information about the topic. One example was that of two girls and their project.

The two girls wrote and performed a poem and dance relating to the Civil War during a Civil War unit. Teachers were asked to reflect on the presentation according to questions earlier created by the class. The roles seemed to be turned around, having the students ask for assessment, rather than the teacher necessitating it. Although teachers were in control of the curriculum and procedures in the classroom, students were to be responsible for their learning in the projects and procedures being introduced; they took responsibility for their own learning.

Another school that used the theory of multiple intelligences and the basis of Project Spectrum was the Montgomery Knolls Elementary School in Silversprings, Maryland, a preschool-through-grade-2 magnet school. The teachers were interested here on how to incorporate nontraditionally chosen students for the gifted program at the school. Because the theory of multiple intelligences questions the basis of the intelligent quotient, it also questions the basis of today's gifted programs, which are chiefly based on linguistic and mathematical-linguistic intelligences. Because all intelligences are equally important, according to Howard Gardner, he believes that gifted programs should have individuals who are intelligent in other areas, not simply these two areas. Those who are linguistically or culturally different than the majority were automatically disqualified for the program since they did not know the language or culture of the area. They believed, as Gardner believes, that students who had these barriers were underidentified in the population of the gifted students in that school (Chen, 1998). Modeled after Project Spectrum, the school taught

each domain (from the nonuniversal theory of Feldman, Chen, 1998). They also used the assessment tools from Spectrum, such as the assembly assessment of a food grinder). Teachers identified and monitored student weaknesses and strengths while they developed a multiple intelligences-modeled curriculum. Teachers then evaluated the progress of students later in the year. Students were admitted into the program through multiple intelligences that had not been in the program initially because of language and cultural obstacles. Teachers were able to bridge gaps in students learning so that nontraditional gifted students, too, could be taught appropriately.

Another school system, closer, geographically and communicatively, developed a system and school to teach students with multiple intelligences. In Indianapolis, Indiana, Indianapolis Public Schools collaboratively introduced in the fall semester of 1987 the Key School. Its goal was "to create interdisciplinary theme instruction and assessment across the seven intelligences (Key Learning Community, "history" 2001)." According to Gardner, this school's students participated daily in many classes, each geared to one of the seven intelligences. Students also visited elective courses which they called "pods" and visited a "'flow room, where they [could] focus on the ac-/tivities that highlight intelligences and combinations of intelligences that [students favored] (Disciplined Mind, pp. 106, 107, 1999)." Since then, the Key School has changed its name to the Key Learning Center and has made improvements, but still strives to "celebrate diversity as well as personalize education through an emphasis on identifying

and building upon each students' strengths in . . . intellectual areas: 'linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal (Key Learning Community, "About Us," 2001, quoting Gardner, 1983).'" The Key Learning Center strives to teach students in a model of multiple intelligences in the best practice possible.

The Key Learning Center also works with Ball State University and IUPUI (Indiana University-Purdue University of Indianapolis) to prepare practicum education students the opportunity to learn. The Key Learning Center is committed to "teach others and share the educational innovations of the Key School (Key Learning Community, 2001)." Not only are they committed to helping their own students to learn, but they are also committed to teaching other professionals and college students to learn.

Many schools have made efforts to improve their curriculum and the understanding of their students through multiple intelligences. These are just a small few of that huge number. Project Spectrum was in progress from 1984 through 1993. Although Project Spectrum is no longer a research project of Project Zero, it was instrumental in achieving the research and discovery for those who understand and believe Gardner's theory. Project Spectrum identified many methods, assessments, plans of action, and other information for and about the theory of multiple intelligences. It was a stepping-stone for teachers all over the United States from an intellectual theory to a practice used by hundreds of teachers, whether exclusively or inclusively. Some teachers have decided to

use a Project Spectrum approach, while others have decided to integrate multiple intelligences teaching into preexisting methods at schools.

Earlier, I proposed two questions. The first was "How can a teacher use the theory of multiple intelligences to reach students whose strengths are not so-called 'academic intelligences?'" The other was "How can I take what Howard Gardner has learned by working with exceptional children (mentally retarded, autistic, gifted, and otherwise non-average children) and apply it to a wide variety of students in one classroom?" Many of the schools mentioned have done those two things. From the research of Project Spectrum, the Key Learning Community, Gardner, and independent teachers and schools (not affiliated with Project Spectrum), I want to teach using the best practices possible and with the best success, appealing to all students' intelligences. Many of these schools and teachers have done a superb job of modeling these techniques for teachers like me. They have shown me that I can teach a regular classroom full of a variety of students with strengths in a variety of areas to encourage students to learn.

Many of these researchers and teachers, individuals and entire schools, have discovered how multiple intelligences may be used in the classroom and have helped students succeed using this information.

How can a teacher use the theory of multiple intelligences to reach students whose strengths are not so-called "academic intelligences?" I proposed earlier that by using Gardner's theory to compose a program that would promote other intelligences would help students in all areas since students may use their

intelligences in their strongest areas to help strengthen their weaker areas. If I can make a relationship between nonacademic and academic information and students excel in one nonacademic domain, according to Project Spectrum's research, students will strengthen their weakest areas.

For example, Bruce Campbell used the theory of multiple intelligences in his classroom. After having a fifteen-minute lesson and after students have spent time in the centers, students may recognize the reading material as easier than it would have been without all of the learning that took place at the centers. The art, musical, movement, journal writing, and group discussions all helped students understand photosynthesis. If a student could not read well but could see perform visually and artistically well, students may then understand the written words of photosynthesis in a textbook. Bruce Campbell could then teach the lesson again from the written text. Students would help themselves from "borrowing" from other intelligences, if I may call it that.

My second question was how I could take what Howard Gardner has learned by working with exceptional children (mentally retarded, autistic, gifted, and otherwise non-average children) and apply it to a wide variety of students in one classroom. All people have strong, average, and weak areas, in comparison either to themselves or other peers. I may use the information presented by Gardner's theory to teach my students. As with exceptional children, all students have at least one area that they may excel and at least one area in which they are weak.

Research and personal experience also show that students help each other and they help themselves using other intelligences to help them learn in areas they have problems. Students can help each other in a positive fashion if the teacher sets procedures in the classroom to do so. As I student teach, I know some students are strong in linguistic or logical-mathematical intelligences while others are strong in the other intelligence. I use this opportunity, sometimes, to help students teach each other. One student may be able to read very well while the other has difficulty. Students who can read well and have interpersonal skills may help others who cannot read as well. Likewise with the math, when those who understand the math concepts are finished, I encourage them to help those who do not understand the concepts.

Project Spectrum researchers, teachers, and others, including Howard Gardner have developed many wonderful methods to teach using multiple intelligences and to encourage others like me to teach using them. Some of these methods have been already introduced, such as the thematic unit program of Bruce Campbell. Some new methods will be introduced in the following paragraphs. Many teachers have already developed ways in which to use the theory of multiple intelligences in the classroom.

These people, including Gardner, have also inspired me to formulate my own methods and to elaborate on the ones they have created. I will also discuss these after discussing the experienced professionals' methods and plans.

I believe one strong idea that Project Spectrum advocates is that all students have strong, average, and weak intelligences. If we believe this as we teach, we understand that even the student we think that "just cannot learn anything," such as one teacher said of a student from the Somerville public school, really can learn something, and has an area of intelligence in which he or she can excel (Chen, 1998). We simply must understand that all children can learn, but they learn in different ways. Some students understand linguistically better than others; some students understand spatially better than others. With some students, their personal best intelligence may be lower than others, but that is still their own intelligence in which they excel.

Spectrum has learned a second idea from their students. They have learned that students are good at helping one another. If a student excels in one intelligence, he or she can help other students. For example, one child really understood how to assemble the food grinder while others did not. He said, "'You don't have to take this apart, just open it.' Later, he worked with the girls, and even requested that one girl help him complete the task (Chen, p. 58, 1998).'" The author went on to say that his classmates often asked him for mechanical help because they knew "'he [was] so good at it (Chen, p. 59, 1998).'" Students are able to assist one another in order to help strengthen others' intelligences.

Howard Gardner and other researchers stress using natural and realistic activities. By using realistic activities, students work better than using simplified, impractical activities. Students understand even complicated things if they are

realistic and meaningful (Chen, 1998). Students also learn more if activities are realistic and meaningful than simple, impractical ones.

A specific method used by SMILE and Boston's Children's Museum, Bruce Campbell and Briarcliff Road Elementary School was applying multiple intelligences to lessons in thematic units. SMILE and Boston's Children's Museum used thematic units about science to teach children about light using many different domains and multiple intelligences. Bruce Campbell designed seven learning centers to accompany a short lesson so students would learn by exploring the centers. Later, I have examples from a thematic unit on communities that is about one month long. Different lessons highlight different intelligences. Each lesson in a thematic unit may not cover all eight intelligences, but students are involved in multiple intelligences during the thematic unit.

Another common method teachers and institutions use is that of learning centers such as Bruce Campbell and Somerville schools. This technique, when developed and when procedures are followed, is self-directed for students: students learn by interacting with materials or information at each station. Students are involved with the learning centers. Using learning centers is one way to promote using multiple intelligences. Some schools may integrate learning centers slowly, as Somerville public school, or all at once, such as Bruce Campbell. Depending on the program and the design of the program, centers may be introduced slowly or all at once. Students learn at their own rates. Learning centers may also be designed to easily accommodate learning using

multiple intelligences because each learning center or activity could highlight each intelligence.

Briarcliff Road Elementary School not only uses thematic units, but also uses a style combining two theories: that of Gardner's theory of multiple intelligences and that of project-based learning. Project-based learning goes along well with using multiple intelligences as long as the teacher is sure to introduce activities that will appeal to each intelligence. Otherwise, the teacher uses only project-based teaching.

Briarcliff Road Elementary, which I did not discuss earlier, is a program that initiated utilizing a multiple intelligence approach along with a project-based approach. The school year only had perhaps four units per school year to teach in great detail about a few specific topics.

Another, more specific, method to use this theory is to use it to use multiple intelligences as "additional languages" for student learning as the researcher described it (Chen, 1998). As a teacher who hopes to someday teach students to speak English as a Second Language, this is a very important method. A teacher who had taught in Sacramento, California, where most students spoke English as a Second Language, used drama to teach her students English. Through this, they used song (musical), movement (bodily-kinesthetic), art (spatial), and other symbol systems (logical-mathematical and linguistic) to learn English. Students progressed from knowing very little no English to being able to discuss the play with a reporter (interpersonal).

Teachers can use multiple intelligences to assist students in learning English as a Second Language.

Project Spectrum also uses a nontraditional way of assessing students and looks at student achievement differently than others. For example, students are asked to disassemble and reassemble a food grinder (Chen, 1998). Students are assessed on even nonacademic abilities. Also, in a Spectrum classroom, students are not expected to excel at everything, but only something to show an excellent intelligence in one area. Teachers could assess student abilities in many domains to realize the student's strengths to help students in their weakest areas.

At Spectrum sites and at Fuller School, students are assessed differently than in regular classrooms to realize the gifted students in the school. Project Spectrum researchers propose the question that if all intelligences are equal, why are some groups of students under-identified as being gifted? Project Spectrum and Fuller School decided to increase the number of these under-identified students and make it possible to allow them into the program. One example of this may be to test bilingual or non-English-speaking students in their native language, not in English. "Spectrum changes ideas about what children should be considered 'gifted or talented (Chen, p. 43).'" Students are not simply judged on their mathematics and language skills to enter into a gifted and talented program.

Coinciding with many teachers, Gardner believes that teachers should have what he calls "multiple points of entry (Gardner, Disciplined Mind, p. 188,

1999)," but teachers simply call them motivations or ways to begin a lesson. Gardner theorizes that teachers "can find at least seven powerful entry points to diverse concepts. These opening gambits help to introduce important and challenging topics (Gardner, Disciplined Minds, p. 188, 1999)." These lesson openers are closely aligned with the eight multiple intelligences.

The first of these multiple entry points is the Narrative entry point, using stories to create imagination in the heads of students. Most children love hearing stories and allowing their imagination to wander while the storyteller dramatizes or reads the story. Even in music, this works well, describing the plot of an opera (Gardner, Disciplined Mind, 1999 and MusHis 100, spring 2001). This entry point is aligned with the linguistic and personal intelligences. The narrative entry point is one of seven motivational tools to use for a lesson.

A second entry point is that of numerical entry points. Some people understand and work well with numbers. An example of a numerical entry point may be doing math problems, counting the meter in music, or discussing numerically how many people were affected by a decision (Gardner, Distinguished Mind, 1999). This is an example of logical-mathematical intelligence being displayed. With a numerical entry point, students work with numbers while discussing a topic.

The third entry point is the logical entry point. Students may think logically about what would happen to make an outcome be realized. As an example for elementary students, if students were trying to find how many pennies there

would be if there were 20 pennies in four groups, it would be logical to multiply (or add 20 four times, depending on the level of understanding) the numbers.

Existential or foundational entry point is the fourth entry point. "Why do we have zero in numbers? Could we live without a zero?" This may be higher-level mathematics thinking, but they are asking, "Why does something exist?" Existential or foundational entry point is linked to logical-mathematical intelligence and the personal intelligences. Asking why something exists is a higher-level question but may be asked to promote student thinking.

A fifth entry point is that of aesthetics. I remember working in art class (AED 300) and discussing aesthetics: Is this aesthetically pleasing? Aesthetics deals with elements and principles of art: Is the piece balanced? Is it appropriate for the setting? Do the color, shading, and size fit the piece? Gardner takes this entry point further, though, and uses it to discuss the world around us, inviting not only the spatial intelligence, but also the naturalist intelligences. Gardner uses this entry point to discuss the elements and principles of art to apply them to a wider range of ideas (Gardner, Disciplined Mind, 1999).

An obvious and almost last point of entry is that of being "hands on Gardner, Disciplined Mind, 1999)." Students learn very well by using their tactile senses. This entry point appeals to spatial and the personal intelligences and perhaps the naturalist intelligence. Students learn easily by touching, tasting, and smelling physical objects around them.

The last entry point Gardner discusses is that of interpersonal point of entry. Some students like to learn in a group setting. Students who learn more

easily with others to help them will benefit from an interpersonal entry point or motivation. Students may work together to begin a lesson. Students may discuss in a group setting options, use teamwork to accomplish a goal at the beginning of a lesson, or collaborate to do a project. Some students work well with others, and some of them, as I have experienced, learn from using an interpersonal entry point because they are weak in interpersonal intelligence. This type of entry point is beneficial to students who either do or do not work well with others.

Teachers can use this information to teach using different entry points or motivations for lessons. Teachers can also use these intelligences to teach an entire lesson of perhaps a unit to engage students in learning. Different students may learn differently with different points of entry. Many students will do well with narrative and hands on entry points, but other students may excel using other entry points.

Howard Gardner also gives several warnings about the theory of multiple intelligences. He stresses that "these intelligences are not fixed; rather, they can be enhanced by educational opportunities such as an environment rich in stimulating materials and activities (President of Harvard, 2000)." He also warns of the labeling of students. Because these intelligences are not fixed, we cannot label students by any of these intelligences. These areas are to help students and to monitor them, not to label and stereotype them. He finally warns us that "there are virtually no longitudinal data to suggest the extent to which a profile

[label] is valid at one age will necessarily endure 2 years, let along 2 decades." Students may improve in some intelligences and become weaker in others.

Since I began my education at Ball State University, I have learned that to be an excellent teacher, one must continue professional growth and development. Good teachers continually grow, seeking new research and better and more sound methods to teach. I do not promote the theory of multiple intelligences just to promote it, but I see it as a tool to teach students so that they understand. I will continue professional development throughout my career as a teacher. Some ideas of the theory of multiple intelligences, for right now, seem to be logical and practical for me to use to help my future students excel in life skills.

Using these ideas from experienced professionals (researchers and teachers), I would like to introduce my plans using some of the methods other teachers and researchers have designed, modifying some, and also creating my own methods. I want to use best practices in my classroom and to teach so that children understand information but are challenged to want to learn and do more. I hope by using a modified multiple intelligences method, as well as other methods in my classroom, I will be an excellent teacher with excellent ideas and excellent outcomes for students. I want my students to learn information they will need to not only pass school tests, but also to survive, succeed, and excel in life. I have several ideas and want to explain them as well as possible.

I have also included several lesson plans and units. They are labeled as to which intelligences I primarily and secondarily wanted to apply during the lessons and units. These are listed in the appendix of this thesis.

I want my teaching to apply to as many students as possible. Some students learn linguistically or logical-mathematically, but others learn musically, bodily-kinesthetically, or interpersonally. I want to teach my students so that they understand.

I do not want to teach my students not to use the intelligences in which they are weak; I want them to initially learn the material, and if need be, by means of another intelligence. However, students must learn to use that specific intelligence.

Gardner gave an example in Frames of Mind: The Theory in Practice of a student learning math who does not understand it in a logical-mathematical intelligence. The student may learn it through another intelligence for a while, such as through linguistic or spatial intelligences (in written form or an explanation, or through manipulatives such as base ten blocks), but there will be a time that in order to understand that math problem completely, he student must learn it completely in mathematics. As Gardner says, "at some point in the learning process, the mathematics of the principle must 'speak for itself (p. 33)." He proceeds, claiming that the medium (the way that the information is presented) does not work for the student. However, later, he continues by saying we can initially explain the information through other intelligences, which he calls

a "metaphor or translation (p. 33)," but we must also understand, that we must help the child see this in logical-mathematical terms, because someday, the mathematics may be so difficult to put into another intelligence that the student may not understand. In saying that, I want my students to be able to use other intelligences to help understand information but still be able to understand it in the right intelligence to help them succeed later in life.

I also want to use all intelligences in my classroom. School is so full of written and spoken language and in mathematics, but for those who excel in other intelligences, the other six intelligences must be used in classes as well. For example, my students may sign the letters of words in sign language while we spell them out loud while doing word walls such as an upper-grade teacher in New Haven Elementary to use spatial and linguistic intelligences together. (Word walls are a list of words that students learn to spell from frequent use. In many classrooms, words are printed alphabetically and may be added to throughout the year. Word walls are established in Four Block curriculum.) Students may also work together in teams to make decisions to promote the personal intelligences while working on a linguistic or logical-mathematical intelligence activity. I plan to use all of the intelligences in my classroom to promote learning.

I plan to be realistic while using multiple intelligences in the classroom. I plan to have a meaningful reason behind using a secondary intelligence within a lesson. I want to teach something with the second intelligence, not just to have an activity so that I can say I have used multiple intelligences.

I was so excited when I read of the teacher from Sacramento, California who used drama to teach English. Students knew almost no English, and through producing and presenting a play, students learned English through drama. Jo Gusman was able to use movement, language, other symbol systems, drama, interpersonal and intrapersonal skills, and art. That was ingenious. I have never taught a child to speak English, but I have taken several classes so that I have the ability to do so. I would absolutely love to be able to teach English to non-English-speaking students using many different venues and intelligences to help them understand. She used logical-mathematical, spatial, musical, linguistic, bodily-kinesthetic, interpersonal, and intrapersonal intelligences to teach children English (Chen, 1998). That was so exciting to read about that I would like to try it in my class.

Throughout my education at Ball State University, I have learned many different approaches to teaching. I have learned that I can use toys to teach science, food to teach math, and drama to teach social studies. These are very good ways to introduce multiple intelligences within the classroom. For science, a rubber ball and a staircase may be used to teach gravity, integrating spatial and logical-mathematical intelligences. In math, lima beans may be used to make base ten blocks by gluing ten lima beans onto a tongue depressor and then gluing ten tongue depressors together on a piece of cardboard. Students use spatial, logical-mathematical, and interpersonal skills creating the base ten lima bean blocks (Ball State University classes PHYCS 101, MATHS 201, 202, 391, SS 397).

During my time at New Haven Elementary, I have been able to survey the books the students use. When I visited the classroom last May, I was excited to see that our reading books promote learning with multiple intelligences, or at least domains. Within the McGraw Hill Reading textbooks (2001), there are several extension lessons for each story for fine arts, social studies, math, and science and "alternate activities ("Alternate Teaching Strategies, pp. T61-66)" that include kinesthetic, visual, and auditory learners with the multiple intelligences that are addressed in each of these three types of activities.

Inviting speakers to talk to a class or having the class go on a field trip invites learning through multiple intelligences. As Ball State University suggests, inviting speakers to address the class is an excellent way to integrate material into a unit (Phi Delta Kappa, 2000). Field trips like to Boston's Children's Museum for SMILE (Chen, 1998), are excellent ways to integrate materials and to apply to multiple intelligences. Teachers can take advantage of these opportunities to teach using secondary intelligences. Students learn information in a unique fashion if they have speakers or field trips. Speakers and guides during field trips may think of different ways to present information than may teachers. Students also listen differently to new people, whether they are speakers or guides during field trips. Students may learn new information in different approaches so speakers and guides during field trips may be vehicles for multiple intelligences.

As suggested by my supervising teacher during student teaching, it is very beneficial to give instructions to students in more than one style. For example,

my supervising teacher may give written and verbal directions while she models what the students are to do (Nancarrow, 2001). If students are completing an activity and she gives directions three different ways, students use interpersonal, intrapersonal, linguistic, spatial, and logical-mathematical intelligences to understand the procedure. She understands that if a child does not comprehend one style of directions, the student has two other styles. There are also four other intelligences that are being applied, and even if a student is very weak in one, there are still five other intelligences to understand the procedures.

Howard Gardner also explained seven points of entry. As a teacher, lesson starters are crucial for having students understand. These seven entry points encourage students of different intelligences to understand information presented differently. Most children understand stories well, but some students may understand by using other entry points as well. By choosing to vary the motivation or lesson starter, students are also more interested than if the teacher used the same type of motivation everyday.

As I mentioned earlier, teachers may also use these entry point fashions to develop an entire lesson or the middle of a lesson. During my unit, I had students listen to a story I adapted about being on the Mayflower (Ziemer, no date given). Students were to close their eyes and imagine how it felt to be on the Mayflower. By using a narrative entry point, students realized the sea-sickening voyage Pilgrims and other travelers must have endured. We then discussed how the Pilgrims must have felt and how they would be glad to land in the new colony.

I hope to integrate lessons when I teach. Students learn in a more realistic and in-depth way than if lessons were exclusively taught within each subjects. Students can relate information to the world around them and to other subjects. Many topics lend themselves to integration, such as history and literature (social studies and language arts), culture and food (social studies and health), or geometry and art (mathematics and art). Integrating subjects lends itself to teaching with multiple intelligences since material is already diversified. As a student teacher, I have been able to integrate some curriculum to realistically broaden student learning. Students learn information well.

Some books are filled with innovative ideas to integrate subject matter. I have already mentioned our basal reader (McGraw Hill, 2001) as one example of integrating other subjects and appealing to multiple intelligences. Another example, our social studies book, Living in Our World (Harcourt Brace & Co., 1997), provides picture storybooks for each unit to "set the scene with literature (Harcourt Brace & Co., p. iii, 1997)." The units then have lessons that discuss social studies but refer to the story to explain the ideas. Some textbooks have listed integrated activities and lessons for teachers to use in the classroom.

Howard Gardner, a researcher in child psychology, believes that there is not one, but there are at least eight intelligences. His definition of intelligences is "the ability to solve problems, or to create products, that are valued within one or more cultural settings (Gardner, Theory of Multiple Intelligences, p. x, 1993)." Intelligence is not one single intellect and it is not measured by what goes on

inside of one's head. As Gardner stated of himself and everyone else, "My intelligence does not stop at my skin; rather it encompasses my tools (paper, pencil, computer,), and my network of associates (office mates, professional colleagues, others whom I can phone or to whom I can dispatch electronic messages) (Gardner, Theory of Multiple Intelligences, 1993, p. xiii)." As a teacher, I must remember that and aim to teach so that my students understand. My teaching should apply to every student, not to those who happen to be linguistically or logical-mathematically intelligent, but to all students, no matter what their intelligence. I should strive to be the best teacher I can by teaching students so that they understand.

I should take advantage of the strengths students have in order to teach them and others fairly. Each person has intelligences in which he or she is strong, average, and weak, whether comparing to oneself or to another person. A student can use a stronger intelligence to help him strengthen a weaker intelligence in himself. He may also help another student weak in that intelligence to strengthen her weak intelligence. Students can encourage one another to be strengthened.

Although people may have "biological potentials (Gardner, Theory in Practice, p. 9, 1993)" to more easily learn one intelligence rather than another, Gardner states that there is no research to suggest that intelligences cannot be strengthened or weakened. He states that labels or profiles not last forever (Chen, 1998). A person's intelligence may change in a short amount of time

because it has been strengthened through other intelligences in that person or through other peoples' help and other environmental factors.

I plan to continue my professional development throughout my career. I want to be the best teacher I can possibly be and to teach students in the best possible way I can. I want to show them understanding and knowledge in ways they understand.

Appendix:

Lesson Plans and Units

I have a list of example lesson plans and units for teachers to view. Each has a list of multiple intelligences used in the lesson or unit. These have been lessons I have taught in student teaching or field experiences or that I would like to teach in my classroom. I have taught in all grade levels so these are not grade specific, nor do they follow any sequential orders. I have tried to put them into chronological order, however, according to grade, and have tried to organize them based on primary subject area. The exception is for lessons within units are chronological and sequential for the majority. I hope these examples give teachers an insight as to how to use the theory of multiple intelligences within the classroom.

Autumn Communities:

Our Community

and

The Pilgrims from 1621

Kristin Bell

Rationale

The basis of the Indiana's social studies curriculum in third grade is "communities." Through the concept of communities, third graders learn about their own communities, the communities of others throughout the world, and of others throughout time. Students also learn about our country's history, government, and geography through the concept of communities. Students learn about the Pilgrims of the 1600s, our present-day community, and the local government of our community.

Social Studies: A large portion of this unit is centered on social studies. Students learn about "individuals, society, and culture" (Standard 5, social studies) by discussing the community in which we live and go to school today and the community in which Pilgrims lived in the 1600s. Students also study the history (standard 1, social studies) how the Pilgrims of Plymouth Rock, Massachusetts helped in the settling of our country. Students study the geography (standard 3, social studies) of Plymouth Rock. Students also study the civics and government (standard 2, social studies) by studying being good citizens of a community and studying the duties of a mayor of a community.

Language Arts: Stories and spelling words have been carefully selected for this community unit to enhance the learning of communities. Students read three stories that discuss people living in a community and what it means to live in a community (standards 2 & 3, language arts). Students study specific spelling words (standard 6, language arts) to relate to facts accompanying learning in social studies.

A speaker will also join our class to end the unit. Students will listen (standard 7, language arts) to him discuss communities, his duties as the mayor, his association with city council, and what our responsibilities are as a citizen of the community (standard 2, social studies).

Students will creatively write (standard 4, language arts) about being lost in a large community and who responsible community members are who could help them find their parents.

Mathematics and Science: Although information on mathematic assignments are not historically based, critical thinking problems (standard 6, mathematics) and number sense (standard 1, mathematics) questions will relate to the Pilgrims by discussing food, ships, wild animals, Pilgrims, and Indians.

Fine Arts: Students will prepare for a 25-minute, historically based, Pilgrim and Indian drama. Students will prepare for three weeks and perform the play twice.

Art: Students will illustrate scenery for the play by studying illustrations and historically reenacted photographs of the Mayflower and Plymouth Rock, Massachusetts. Students will create costumes for the play.

Goal

Students will learn about and appreciate the Pilgrims as a community bettering their lives.

Students will learn about communities in general and apply that understanding to our community.

Students will appreciate our community and be good citizens of our community.

General Objectives for Community Unit

Students will perform The Pilgrims and the First Thanksgiving for second, third, and fourth graders and parents.

Students will write several activities, including two narratives and an explanatory story.

Students will show comprehension of Unit 1 of Living in Our World and about the Pilgrims by participating in discussions and taking a comprehension test.

Materials Needed for Unit

Textbooks:

Boehm, R. (1997). Living in our world series. Orlando, Florida: Harcourt & Brace Company.

Flood, J. et. al. (2001). McGraw-hill reading. New York: McGraw-Hill School Division.

Trade books:

DiCamillo, K. (2000). Because of Winn-Dixie. Cambridge, Massachusetts: Candlewick Press.

Spinelli, J. (1990). Maniac Magee. New York: Scholastic/ Boston: Little, Brown, and Company.

Hall, D. (1979). Ox-cart man. New York: The Viking Press.

Waters, K. (2001). Giving thanks: the 1621 harvest feast. New York: Scholastic Press.

Calendar of Events

Week 1

Monday, October 29, 2001

Students will take spelling test with words related to City Green. Introduce vocabulary for City Green. Students will begin reading the first half City Green, a picture storybook about a girl who helps her community and answer comprehension questions about it. Also read chapter of Maniac Magee by Jerry Spinelli, the book we have been reading during story time. (We began reading it around the time of the September 11th attack to address equality. However, it also applies well to communities.)

Tuesday, October 30, 2001

Discuss the first part of City Green by Dyanne Di Salvo-Ryan and read second half of story. Answer questions about it and how one can help his or her community. Continue reading Maniac Magee. Discuss the season of harvest.

Wednesday, October 31, 2001

Discuss second part of City Green and discuss how to be a good citizen in a community. Define and use five vocabulary words. Students will find words in the glossary and write excellent sentences. Continue to read Maniac Magee.

Students will do an addition and subtraction worksheet decorated with pumpkins. Discuss harvest and our community. Read Ox-Cart Man by Donald Hall.

Thursday, November 1, 2001

Continue to use five vocabulary words of City Green and prepare for Friday's test of story. Discuss harvest and our community. Create autumn and harvest mobiles. Students will read City Green to parents as homework to prepare for Friday's test.

Friday, November 2, 2001

Students will take Spelling test related to City Green. Prepare for and have written test on City Green. Discuss our community, New Haven, Elementary. Discuss different citizens of community.

Week 2

Monday, November 5, 2001

Students will review vocabulary from City Green. Introduce vocabulary for Roxaboxen and lesson 1 of social studies (Living in Our World, Harcourt Brace, 1997). Introduce Roxaboxen by Alice McLeeran. Students will read Roxaboxen and lesson 1 of social studies book following the story, first individually, then with partners. Students will answer comprehension questions about the story and

vocabulary. Students will take oral vocabulary test for City Green. Introduce play, The Pilgrims and the First Thanksgiving, by Susan Nanus, and assign parts. Students will read lines of play to introduce parts.

Tuesday, November 6, 2001

Students will write a paragraph describing why they are thankful for what veterans have done for our country or why they are proud to be Americans to display for Veterans Day and for the veterans visiting Monday, November 12. Discuss Roxaboxen and lesson 1 of social studies book. Students will use two vocabulary words from Roxaboxen to make sentences after finding their meanings in a dictionary. Students will discuss geography vocabulary and do a worksheet, "Where on Earth?" from lesson 1 (Living in Our World, Activity Book, p. 1, 1997) and part of "What is a Community," (Living in Our World, Activity Book, p. 11, 1997), a Chapter 1 review worksheet. Students will finish oral vocabulary test for City Green.

Wednesday, November 7, 2001

Students will continue to use two vocabulary words from Roxaboxen to make sentences. Students will prepare for test for Roxaboxen. Students will make an American flag to hang on the bulletin to display for Veterans Day and for the veterans visiting Monday. I will read to them a story of why the Pilgrims came to the United States that I wrote from the knowledge of the play and other sources.

Thursday, November 8, 2001

Because of parent teacher student conferences, students will leave at 10:20. Students will prepare cards to celebrate veterans hospitalized at the V. A. for Veterans Day. Originally, we had planned to take the test for Roxaboxen, but because of the shortened day, we were not able to do so.

Week 3

Monday, November 12, 2001

Students will take pretest spelling test for words related to Dream Wolf (Paul Goble). Students will prepare and take test for Roxaboxen. I will read Maniac Magee to students. I will read "Invite Your Students to Sail the Mayflower," originally written by Maryann Ziemmer that I adapted. Students will have permission to close their eyes to imagine being on the Mayflower. Discuss the Mayflower voyage. Students will complete "Mayflower Math," a math worksheet about the number of people on the Mayflower; the length, width, and height of the ship; how long ago the Mayflower came to the new colony; and the time Pilgrims were aboard the ship (published handout given to me from Ball State University professor, pp. 182, 183). Students will practice play.

Tuesday, November 13, 2001

Introduce vocabulary for Dream Wolf by Paul Goble. Students will read first half of story and answer comprehension questions. I will read Maniac Magee to students. Students will practice play on stage. Students will do a worksheet on ordering numbers decorated with pumpkins.

Wednesday, November 14, 2001

Discuss first part of Dream Wolf. Students will read second half of Dream Wolf and answer comprehension questions. Students will begin to use the five vocabulary words of Dream Wolf. Students will find words in the glossary and write excellent sentences. Students will take oral vocabulary test for Roxaboxen. I will read Maniac Magee to students. Students will answer two-sided number sense worksheet. One side is "Ordering Numbers," another math worksheet decorated with pumpkins. The other side is "Turkey Turnabout" (The Education Center, Inc. *Teacher's Helper* – grades 2-3 Nov./Dec./Jan. 1994-95). Students will practice play.

Thursday, November 15, 2001

Discuss second half of Dream Wolf. Students will continue to use vocabulary of Dream Wolf. Read Giving Thanks: The 1621 Harvest Feast by Kate Waters. Students will write "A Native American's First Thanksgiving," the story starter (The Trumpet Club, 1997). Girl Pilgrims will make bonnets from handkerchiefs. Students will take oral vocabulary test on Roxaboxen. I will finish

Maniac Magee and we will discuss how people should treat each other with respect, among other things. Students will practice play.

Friday, November 16, 2001

Students will take spelling test that relates to Dream Wolf and take spelling pretest for Thanksgiving words. Students will finish using vocabulary of Dream Wolf. Students will prepare for test and take part of test for Dream Wolf. Students will practice play using bonnets, aprons, and hats.

Week 4

Monday, November 19, 2001

Students will do dress rehearsal and prepare room for play. Chief Massassoit will distribute programs to all adults entering the room. One of the storytellers will distribute programs to all adults who have already entered the classroom. Three 2nd and 3rd grade classes and some parents of our students will visit our class for our first performance of The Pilgrims and the First Thanksgiving by Susan Nanus. Students will critique their own performance and practice the play for parents. Parents are invited to stay for lunch. I will read the rest of Giving Thanks: The 1621 Harvest Feast by Kate Waters. Students will finish test for Dream Wolf.

Tuesday, November 20, 2001

Students will do dress rehearsal and prepare for play. Chief Massassoit and his Indian warriors will distribute programs to all adults entering the room. Three 2nd and 3rd grade classes, as well as many parents and school staff will watch our final performance of The Pilgrims and the First Thanksgiving by Susan Nanus. After classes and staff leave, students will rearrange room and read their "A Native American's First Thanksgiving" to their parents. Those who finish may read Thanksgiving books from the class's supply of Thanksgiving books (listed in materials). Students whose parents are not present may sit with a friend whose parents are here or read their stories to themselves. Parents are invited to stay for our Thanksgiving lunch, turkey, noodles, and mashed potatoes. Students will take oral vocabulary test for Dream Wolf. I will read The Thanksgiving Story by Alice Dalgliesh, discussing real characters from our play that are within the book. Students will do a two-sided Thanksgiving math worksheet. On one side, students compare numbers using the signs < and >. On the other sides, students have "Thanksgiving Puzzler," an addition, subtraction, and decoding Thanksgiving worksheet from Mrs. Nancarrow's files. Students will write another Story Starter, "Turkey for Dinner (Trumpet, 1997)."

Wednesday, November 21, 2001

Students will write in their journals answering the question, "What am I thankful for?" Students will also do "November in History," a teacher reproducible from Instructional Fair (TS Dension, "Challenge Your Mind,"

November/December 2001). Students will complete "Thanksgiving Crossword Puzzle" (The Trumpet Club, 1996). Students will compete in a spelling tournament using words from the unit as well as other words from the first grading period. Students will complete "Shopping List Shuffle," a word scramble of Thanksgiving-related foods (The Education Center, Inc. Worksheet Magazine – Gr. 2-3 Nov./Dec./Jan. 1988-89). Students will write on the reverse of the worksheet "How to Prepare a Turkey for Thanksgiving." (idea from morning newspapers, November 20, 2001). Students will take oral vocabulary test for Dream Wolf. I will read excerpts from The Pilgrims at Plymouth by Lucille Recht Penner and ill. by S.D. Schindler. Students will sign thank you letters to the staff and faculty who came to our play, including teachers and other staff and faculty. Students will sign and deliver a thank you letter to Mr. Martz. As a class, read "Sallet Bar," (Jack & Jill, October/November 2001, pp. 20, 21) by Betty Jo Schuler and ill. by Linda Simmons. Students will also problem-solve using Thanksgiving Problem Solving (Thanksgiving Math reproducible, p. 30, from Mrs. Nancarrow's files). Students will share their stories about "A Native American's First Thanksgiving" and "Turkey for Dinner."

Thursday and Friday are Thanksgiving break.

Week 5

Monday, November 26, 2001

Students will finish all class work from Wednesday. Students will write a plan for an explanatory writing with the theme "What if I Got Lost in a Big City?" Students will first assist me in writing my plan and then plan their own stories. (Some may begin to write a rough draft which New Haven Elementary calls "sloppy copy." Students will eat pumpkin seeds from our decorative pumpkin that was displayed throughout the month of November. I will read to students the first chapter of Because of Winn-Dixie by Kate Dicamillo, a story about a girl moving to a new community meeting her first friends.

Tuesday, November 27, 2001

Students will discuss irregular plural nouns from Dream Wolf. Students will write a sloppy copy of "What if I Got Lost in a Big City?" I will first model writing my sloppy copy and then they will write their sloppy copies. I will read chapter 2 of Because of Winn-Dixie to students. Students will read lesson 2 of social studies book with partners and then answer Lesson 2 review questions at the end.

Wednesday, November 28, 2001

Students will review irregular plural nouns that relate to Dream Wolf. Students and then their partners will edit their sloppy copies after I model the editing and peer editing processes. I will read to students chapter 3 of Because of Winn-Dixie. Students will compete in a Spelling Bee tournament.

Thursday, November 29, 2001

Students will review correcting punctuation and capitalization that relate to Dream Wolf. Students will write final copies of their explanatory writings of "What if I Got Lost in a Big City?" and take them home for parents to check. I will read chapter 4 of Because of Winn-Dixie. As a class, we will read and discuss social studies, pp. 38 and 39 about map reading skills. Students will practice measuring distance on the map on p. 39.

Friday, November 30, 2001

Students will discuss the causes and effects of Dream Wolf. Students will turn in their final copies of their explanatory writing. I will read 5 and 6 of Because of Winn-Dixie.

Week 6

Monday, December 3, 2001

I will read chapters 7 and 8 of Because of Winn-Dixie.

Tuesday, December 4, 2001

I will read chapters 8 and 9 from Because of Winn-Dixie. As a class, we will reread lesson 2 of social studies. We will discuss it and answer lesson 2

review questions as well. We will read p. 42 about citizenship. Students will read lesson 3 and answer the questions orally at the end of the chapter.

Wednesday, December 5, 2001

I will read chapter 10 of Because of Winn-Dixie. As a class, we will discuss lesson 3 of social studies. Students will read answer lesson 3 review questions on paper individually.

Thursday, December 6, 2001

I will read chapter 11 of Because of Winn-Dixie. As a class, we will discuss lesson 3 of social studies. I will introduce vocabulary for lesson 4. Students will finish writing questions for lesson 3. Students will do activity worksheet, p. 5 (Harcourt & Brace, 1997). Students will read lesson 4 to themselves and then in partnerships or triads. Students will answer, verbally, review 4 questions. Students will do activity worksheet, p. 6 (Harcourt & Brace, 1997) and submit both worksheets, stapled.

Friday, December 7, 2001

I will read chapter 11 of Because of Winn-Dixie. As a class, we will discuss lesson 4. I will introduce vocabulary for lesson 5. Students will read individually, then with partners. Students will answer the lesson 5 review questions verbally and then complete pp. 7, 9 and 10 from activity book (Harcourt & Brace, 1997). Students will be told of their Tuesday test.

Week 7

Monday, December 10, 2001

Mrs. Nancarrow or I will read Because of Winn-Dixie. As a class, we will discuss lesson 5. Students will complete activity worksheet p. 11 (Harcourt & Brace, 1997). We will check worksheet and review chapter. Students will ask any questions. We will play a review Jeopardy-like game.

Tuesday, December 11, 2001

Mayor Terry McDonald of New Haven will visit us to address his role in the community as a mayor and how he and the city council work together as well as our role as citizens of the community. Mrs. Nancarrow will read Because of Winn-Dixie. I will ask if there are any questions. Students will complete the test (book test, Harcourt & Brace, 1997) and submit it. This will conclude our unit on autumn communities.

Multiple Intelligences of

The Harvest Mobile from

"Autumn Communities: Our Community and the Pilgrims from 1621"

Linguistic – Students will listen to directions and read them from the overhead projection.

Spatial – Students will form objects accordingly for the mobile.

Logical-Mathematical – Students must decide the lengths of their strings to attach to the mobile. Students must also think about logical sizes for the pictures. Students must also think which pictures would make sense to hang on an Indiana harvest mobile.

Interpersonal – Students will work in groups of four to five to complete the harvest mobile.

Intrapersonal – Students should feel like they are integral parts of the team to complete the mobile.

Naturalist – Students have studied the harvest season and we have mentioned different plants that Indiana harvests.

Grade Level: Grade Three

Theme or Topic: Communities: "Autumn Communities: Our Community and The Pilgrims from 1621"

Lesson Title: Harvest Mobiles

1. Lesson Objectives:
    a. The students will integrate social studies, math, and art to create harvest mobiles to decorate the class.
    b. The group will cooperate to complete the mobile.
2. Material:
    a. For Reference only:
        i. "Holiday Mobile," a handout from Elementary Speech (SPCH 377, no name given, Fall 1998)
    b. Teacher-provided:
        i. Metal hangers (one per group)
        ii. Yarn
        iii. Fall leaves
        iv. Plant catalog and produce section on grocery advertisements
        v. Hole punches (one per group)
        vi. Construction paper
        vii. Sting and paperclip to hang mobiles from ceiling
        viii. Model of mobile
        ix. Overhead projector to write names and positions of stations
    c. Student-provided

i. Scissors

ii. Pencils

iii. Coloring utensils (crayons, markers, or colored pencils)

3. Procedures:

a. Introduction:

Discuss how the current season (autumn) and harvest relate. Also discuss the community benefits from the harvest that farmers of the community grow and sell.

b. Body:

i. To expand on harvests within our community and to decorate our room for the harvest season, groups of students will create harvest mobiles.

ii. I will discuss procedures and discuss group arrangements. Each team will have one student from each team go to each station.

1. At station one, students will form hangers into the shape they want their mobiles. Then, they will join students in group two to begin assembling the mobile.
2. At station two, students will cut ten to fifteen strings 3 to 9 inches in length. When they are finished, stations one and two will tie strings to the hangers.
3. At station three, students will choose 3 to 5 leaves they want on their mobiles. These autumn leaves have been

dried. Some have been pressed while others have not. When they are finished, they will join stations one and two to tie the leaves onto the hangers with the string.

4. At station four, students will cut pictures of plants that Indiana farmers harvest. They will punch holes through the tops of the pictures. They will join the other three to join their foods onto the mobile by tying strings through the holes.
5. At station five, students will draw and cut illustrations of fruits and vegetables on construction paper with writing utensils. Students will punch holes through the top of the pictures. When they are finished, they will tie their pictures on the mobile with the strings.

c. Closing:

i. One student from each group will hang mobiles from the string and paperclips directly above their desks.

ii. Students will clean up messes and prepare for the next subject.

4. Evaluation:

a. Students should be able to discuss the economic benefit of having farmers in the town. Groups will complete the harvest mobile to display for the autumn season.

b. There will be no formal evaluation or assessment to be graded. I will, however monitor teamwork and problem solving skills.

Multiple Intelligences of

"Invite Your Students to Sail the Mayflower" by Maryann Ziemer

"Autumn Communities: Our Community and the Pilgrims from 1621"

Linguistic – Students will listen to hear the story and later discuss the story as a group.

Intrapersonal – Students picture themselves on the Mayflower and think of what it would be like to be on the Mayflower for 66 days.

Interpersonal – Through group discussion, we discuss how it might have been on the Mayflower.

Logical-mathematical – Students are asked to think of why there might be certain things brought on the ship to America.

Naturalist – Students think of different raw food resources there might be on the ship.

Spatial – Students will picture the size of the ship, the height of the ceiling, and the cramped living quarters on the ship.

Grade Level: Grade Three

Theme or Topic: Communities: "Autumn Communities: Our Community and the Pilgrims of 1621"

Lesson Title: "Invite your Students to Sail the Mayflower" by Maryann Ziemer, adapted by Kristin Bell for third grade

1. Lesson Objectives:
    a. The students will discuss how it felt to be on the Mayflower.
2. Materials:
    a. For Reference only:
        i. "Invite your Students to Sail the Mayflower" by Maryann Ziemer
    b. Teacher-Provided:
        i. "Invite your Students to Sail the Mayflower" by Maryann Ziemer, adapted by Kristin Bell for third grade
3. Procedures:
    a. Introduction:

    Today, I want you to imagine with me about the Pilgrims. I'm going to let you put your head down and close your eyes as long as you don't go to sleep!

    b. Body:
        i. I want students to feel what it was like to be on the Mayflower in October and November of 1620. Students will lay their heads on their desks while I read, "Invite your

Students to Sail the Mayflower" by Maryann Ziemer, adapted by Kristin Bell.

ii. When I am finished, students may put their heads up. We will discuss what it was like to be on the Mayflower as a group. Students will also receive a copy of the story.

c. Closing:

i. Students will prepare to transition to the next subject.

4. Evaluation:

a. There will be no formal assessment or evaluation, but I will observe how students participate in the discussion. Everyone will be expected to participate in some way.

Invite Your Students to

Sail the Mayflower

By Maryann Ziemer, adapted for third grade

Most students will recognize the Mayflower as "the ship that brought Pilgrims to America." How many will recognize the act of courage that brought the Pilgrims to the ship - a vile-smelling, woefully overcrowded cargo vessel, though?

What did it take to cross the Atlantic in 1620? It took more than just a ticket to ride. You are invited to relive this historic voyage and see that their freedom was achieved by down-to-earth planning, perseverance, and sometimes, strong stomachs.

Cramped Quarters: The Art of Packing

The Mayflower was about 90 feet long and 26 feet wide. Besides the 102 passengers and the 30 crew members, the ship had to hold food and fresh water for a two-month voyage, plus everything needed to set up their homes in the wilderness - including food so see them through the first winter.

What would you need to live in a wilderness? As Ellen and Johnny notice when they reach the new land, there are no houses. There are no stores like we would find today. There would just be wilderness, or forests.

The supplies, water, and much of the food were stored in the Mayflower's hold. The crew slept in the fo'c'sle' Master (Captain) Christopher Jones slept in the chartroom.

The great cabin (the captain's usual room) would be for some Pilgrims, while others still had to sleep in the steerage. Other Pilgrims were still put into what was called a 'tween deck, a

short, five foot deck between two other floors. That would mean anyone over 5 feet couldn't stand up on that deck.

There were supposed to be 67 passengers on the ship. Another 35 squeezed onto the ship from the Speedwell, a ship that should have come with the Mayflower but never was able to make the journey. That's like all three third grade classes and the third/fourth grade split, plus the teachers, all in three rooms to live for two months!

The Journey: Long and Hard

Pilgrims sailed from Holland to England in the Speedwell, then from Plymouth, England to now Plymouth, Massachusetts. It took 66 days, just over two months. On November 11th, they arrived at the new land and the master dropped anchor.

For the first two to three weeks, children and adults were all seasick. Their stomachs were in pain all of the time. Have you ever been sick from riding in a car, on an amusement ride, or from

spinning in circles too long? That wouldn't begin to even describe how sick they were!

Seasickness wasn't the only problem for the passengers. Because of all of the water spraying through the cracks of the deck, people would become more able to get sick. They got fevers and other illnesses. Think of how cold it is when you step out of a swimming pool on a cool, windy day or when you walk home on a cold, rainy day. As the water evaporates, it draws the heat from your body, making you less healthy.

The stench, or smell, was horrid. As one Pilgrim mentions in the play, some people haven't washed their clothes or bedding since they left England. They could also smell the sickness of people. There was also little to do with waste, so it sat on the ship as well. It smelled awful on the ship!

Add this to the fear of capsizing (tipping over) or being ransacked by pirates, and those 66 days must have seemed endless.

Good-byes: A Given

The Pilgrims and other passengers had yet another sickness to deal with - homesickness. A decision to travel to the New World meant that many families would be separated, never to be reunited.

Keeping the Faith: A Must

Despite their hardships and heartaches, the Pilgrims surely had joyful moments on their journey. They were with some family, and they knew they would live freely in the new land.

"Everything But the Kitchen Sink"

Pilgrims took specific things with them on their journey to the new land.

Food - Lemons were important to keep people from getting a disease called scurvy. It is from not getting enough vitamin c.

Animals – Hens, roosters, and two dogs. Why might these be important animals?

Tools – Axes and saws were used to cut trees. Hoes, rakes, plow heads, and spades were brought to farm. Tools to make nails, to build houses and furniture, and to repair shoes, hooks, lines, and nets were all important.

Books – Religious books, songbooks, almanacs (informational books on seasons and farming), classical books, and medical books were brought along for people to keep learning.

Furniture – Chests were packed with blankets, linens, and clothes. Tables, chairs, bedspreads, bedding, and cradles were also packed. Needles, thread, spinning wheels, looms, candlesticks, lamps, buckets, and butter churns were also stored to use in the new colony.

Vocabulary

Deck – a floor on a ship

Main hull – the frame or structure of a ship

Beam of a ship – the widest part of ship

Keel of a ship – the length of a ship from bow to stern

Bow of a ship – the front of a ship

Stern of a ship – the rear or back part of a ship

Steerage – the section of the ship for passengers, the cheapest section

'Tween deck – a deck or floor of a ship

Fo'c'sle – forecastle, the quarters for the crew

Hold of a ship – the bottom of a ship for cargo, or storage

Multiple Intelligences

of <u>The Pilgrims and the First Thanksgiving</u> from

"Autumn Communities: Our Community and the Pilgrims from 1621"

Linguistic – Students will read the play and communicate it to others through speech.

Spatial – Students will perform the play with part of the room a stage.

Interpersonal – Students will perform the play for second, third, and fourth graders as well as for parents and other adults.

Intrapersonal – The students will practice the play and pretend to be that person.

Logical-mathematical – Students will use logical thinking and problem-solving skills to solve problems and mistakes in the play.

Bodily-kinesthetic – Students will be required to move and to use their bodies to act.

Grade Level: Grade Three

Theme or Topic: Communities: "Autumn Communities: Our Community and the Pilgrims of 1621"

Lesson Title: "Invite your Students to Sail the Mayflower" by Maryann Ziemer, adapted by Kristin Bell for third grade

1. Lesson Objectives:
    a. The students will discuss how it felt to be on the Mayflower.
2. Materials:
    a. For Reference only:
        i. "Invite your Students to Sail the Mayflower" by Maryann Ziemer
    b. Teacher-Provided:
        i. "Invite your Students to Sail the Mayflower" by Maryann Ziemer, adapted by Kristin Bell for third grade
3. Procedures:
    a. Introduction:

    Today, I want you to imagine with me about the Pilgrims. I'm going to let you put your head down and close your eyes as long as you don't go to sleep!

    b. Body:
        i. I want students to feel what it was like to be on the Mayflower in October and November of 1620. Students will lay their heads on their desks while I read, "Invite your

Students to Sail the Mayflower" by Maryann Ziemer, adapted by Kristin Bell.

ii. When I am finished, students may put their heads up. We will discuss what it was like to be on the Mayflower as a group. Students will also receive a copy of the story.

c. Closing:

i. Students will prepare to transition to the next subject.

4. Evaluation:

a. There will be no formal assessment or evaluation, but I will observe how students participate in the discussion. Everyone will be expected to participate in some way.

"Where in the World is Muncie, Indiana?"

A Geography Unit

Kristin Bell

Rationale

Learning map-making skills and geography are important to learning and vital to one in real life situations. In this integrated unit on mapping skills and geography, fourth graders will learn the concepts of cardinal directions, the compass rose, scale and proportion, types of maps, and the uses for maps. Students will gain knowledge about these parts of geography in the subjects of social studies, mathematics and science, art, and language arts.

Social Studies: Geography is part of social studies. Teachers are to teach progressively less child-centered, beginning in kindergarten and continuing through secondary school. For example, in kindergarten, social studies directed toward oneself. In sixth grade, students learn about United States and world history. Fourth grade is developmentally appropriate for students to learn about one's state.

Mathematics and Science: Map reading skills are part of the world around us. Learning about distance in map reading is just one way to apply mathematics and science in social studies, as the Indiana Standards states in its section of "Connections (pg. 10), "Recognize and develop mathematical applications in social studies, such as graphs, tables, and map skills."

Art: After learning about a new concept, art is a good way to test students using Bloom's taxonomy. A student should be able to make maps, comprehend them, and be able to apply mapping skills. He or she should be able to analyze, synthesize, and evaluate the material. Students should be able to analyze parts of a map (cardinal directions, the compass rose, scale and proportion, types of

maps, and uses for maps). By creating a new, precise map, a child can show his or her understanding of map-making skills on a higher level of Bloom's Taxonomy. Art allows the students on all levels to feel accepted and successful, which encourages healthy self-esteem and self-concept.

Language Arts: Integrating language arts into social studies is important and beneficial. Two standards in the Indiana Language Arts Standards are: "Recognize the topic, main idea, and supporting details for stories and informational materials (pg. 13)," and "Compare and contrast what is already known with new information gained through reading (pg. 14)." I expect students to show comprehension of map-making skills by explaining the main concepts or map-making skills and geography used and discussing what has been taught. Verbally comparing and contrasting is an excellent assessment tool for evaluating student prior knowledge and learning as well as the quality of the teacher's skills as a teacher.

By taking language arts one more step, students could write about their experiences during the unit in a log or journal or write of the comparisons and contrasts of what they knew before and after the unit. Students could also gather more information to do exciting presentations about map-making skills and geography to the class, to another fourth grade class, or another group of people.

This unit should value and encourage citizenship, open participation, kindness and respect to others, and cooperation. These are important to any grade level.

"Where in the World is Muncie, Indiana" will address all four subjects and all of the map skills and geography listed in the objectives. By following the standards for Indiana, students will learn what they should learn by fourth grade.

Goals

In their study of mapping skills and geography, the students will be able to use the maps efficiently in reference to mapping skills and geography, integrated with science and mathematics, language arts, art, and social studies.

Objectives

1. The students will be able to identify different parts of an Indiana State map and explain what each part means. These different parts will include:
   a. Compass rose
   b. Cardinal directions and
   c. escale
   d. proportion
2. The students will be able to utilize several types of maps within the classroom.
   a. Political
   b. Topographic
   c. Relief and/or physical
   d. Road
3. The students will be able to verbalize the characteristics of different types of maps within the classroom and what kind of information each map gives.
   a. Political map
   b. Topographic map
   c. Relief and/or physical map
   d. Road map
   e. Compass rose of a map
   f. Cardinal directions of a map
   g. Scale of a map
   h. Proportion of a map

4. The students will be able to locate:

   a. The United States on a globe,

   b. The state of Indiana on a United States map (political, physical, relief, and topographic)

   c. The city of Muncie, Indiana on an Indiana map (political, physical, relief, road, and topographic)

   d. Indianapolis, Indiana's state capitol

   e. Several rivers of Indiana

   f. Find the borders of Indiana.

5. The students will be able to demonstrate each of the levels of Bloom's Taxonomy in the fact that they can successfully build an Indiana relief map

6. The students will be able to verbalize or write about each part of map discussed in class:

   a. Cardinal directions

   b. Compass rose

   c. Legend

   d. Scale

   e. Scale

   f. Proportion

   g. How to use a map

   h. Different types of maps

7. The students will be able to verbalize the importance of maps in our society.

Materials

1. KWL chart – computer paper
2. Writing utensil (for teacher)
3. World map or globe
4. United States maps (may be in books)
    a. Political
    b. Topographic
    c. Relief or physical
5. Indiana maps (may be in books)
    a. Political
    b. Topographic
    c. Relief or physical
    d. Road
6. Ruler
7. Modeling clay (colored molding material)
8. Ready-made maps for children of Indiana
9. Tools, including pencils, pen tops, and cups
10. Prepared overhead list of needed elements for a map
11. Paper for students on which to write
12. Pencils for students with which to write

Content for Thematic Unit

This thematic unit is simplified to four basic lessons. The unit's material is integrated to cover social studies, mathematics and science, art, and language arts. This unit is designed for grade four.

I. Lesson 0: KWL Chart

   A. Prior to teaching, I will make a KWL chart of what the students already know, what they want to know, and what they will have learned by the end of the unit.

      1. What do my students know?
      2. What do my students want to know?
      3. What will they have learned by the end of the unit?

   B. I will copy the information for later use.

II. Lesson 1: Cardinal Directions, Compass Rose, and the Legend

   A. Display political maps with the cardinal directions, compass rose, and legend imprinted on them.

      1. World map
      2. United States map
      3. Indiana map

   B. Give definitions of cardinal directions, compass rose, and legend. Allow students a chance to define them using my definitions, too.

      1. Cardinal directions are the directions "of foremost importance; paramount (The American Heritage. . ., 1997)."

2. A compass rose is a "directional finder (Sebranek, et. al., 1996)."
3. A legend is a list of important symbols on a map (The American Heritage . . ., 1997, also Sebranek, et. al., 1996).

C. Discuss the importance of the three items on a map and where they are found.
   1. Cardinal directions are north, east, south, and west. They are located on a compass rose, which represents the directions of the map. (Show).
   2. A compass rose, or the direction finder is found on the map, usually found in an inconspicuous place or a place not important on the map. It is usually at the bottom (below the main focus) or to the right or to the left. Its shape is usually a circle with arrows either inside or outside of the circle to show directionality. (Show).
   3. A legend, as the compass rose, is located in an inconspicuous place or in a part of the map that is not very important. It has all the symbols used on the map listed, usually, in a box. (Show).

D. Allow the students to participate and practice with the map, asking questions and manipulating the map.
   1. Discuss, in relation to cardinal directions, compass rose, and legend, the following items:

a. Where is Muncie?

b. Where is Indianapolis, our state capital?

c. Find another city. Where is it in relation to Muncie?

d. Where are Indiana's borders?

e. Can we tell if Muncie is larger or smaller than Indianapolis (or another town)? Why or why not?

f. Where are some rivers of Indiana (if political map is detailed enough to see rivers)?

E. Ask questions from above. Vary the wording and the order.

1. Use questions from above to assess and evaluate student learning.

III. Lesson 2: Different Types of Maps

A. Display different types of maps. Use political map from previous lesson, topographic map, relief or physical map, and road map, all of Indiana.

1. A political map is used to show the divisions of cities, counties, states, and countries or cities and towns.
2. A topographic map is used to decode elevation. Little brown lines are used to decode the tallness of natural and manmade objects (Encarta, 1996).
3. A relief map or physical map is a map that elevation by either three-dimensionally building vertically (relief) or by

two dimensionally creating the illusion that there are three dimensions (physical).

4. A road map is what people use to travel by roads (hallways, etc.).

B. Discuss which maps are most useful for which activities:

1. Learning states, capitals, and facts about maps: political
2. Learning land formations: physical or relief
3. Going on a family vacation to South Bend, Indiana: road map
4. Learning about different elevations of land: topographic (and relief and physical maps)
5. Students choose their own questions to answer.

C. Conclude the lesson: Assess learning.

1. What are some different types of maps and why are they used?
2. What are some differences between political and relief or political maps?

IV. Lesson 3: Scale and Proportion and How They Are Used on Maps

A. Maps are small representations of larger areas of land.

1. Give one example of a map in the classroom. Include:
   a. Scale
   b. Legend
   c. Cardinal directions

   d. Compass rose

2. Define scale and proportion:
   a. A map scale is a devise located usually towards the bottom of the map to measure distances on the map (Sebranek, et. al., 1996).
   b. "Proportion is the size relationship within" the map. (Bell, 1999).
3. Describe that in order to measure distance on a map we must have a proportional (or almost proportional) map and an accurate scale, relating the size of the map to the size of a real area in the same units. For example:
   a. One cm on the map shows a distance of 100,000 cm of the real area. This is written 1:100,000.
4. Show a map of:
   a. The classroom with a scale. Discuss the scale.
   b. Indiana with a scale. Discuss the scale.
5. Sometimes, people use maps and scales to travel. They can use scales on the maps to estimate what the distance of a trip will be. They use road maps for these tasks.
   a. We will review how to measure distance using cm and inches. As long as the students use metric or American Standard in both measuring and

deciphering, it will not matter what they use to measure.

b. We will use a road map to estimate the distances to and from different places.

i. From Muncie to Indianapolis

ii. From Muncie to Fort Wayne

iii. From South Bend to Muncie

iv. From Indianapolis to South Bend

v. From Evansville to Muncie

vi. Students may also list towns and cities for others to find them. All distances may be found with a ruler.

6. Conclude by reviewing and asking definitions of scale and proportion and how to use the map scale to find distance.

V. Lesson 4: Discuss Parts of a Relief map, Relating Them to Art

A. Briefly review what ahs been learned in the last three lessons.

1. Cardinal directions
2. Compass rose
3. Legend
4. Scale
5. Proportion
6. Types of maps
7. Uses of maps

Multiple Intelligences of

"Where in the World is Muncie, Indiana?"

Linguistic – The teacher talks to the students to tell information about maps. The class discusses the information about maps discussed during the unit as a group.

Spatial – Students make a relief map from modeling class and a copied map.

Interpersonal – Students work in small groups to accomplish learning to read maps.

Logical-Mathematical – Reading maps, charts, and graphs are part of logic and mathematics.

Intrapersonal – Students will think about where they live in the world.

Naturalist – Students discuss, ponder, and recreate different landforms and other natural landmarks of Indiana.

Bodily-kinesthetic – Students use fine motor skills to assemble the maps.

Grade Level: Grade Four

Theme or Topic: Geography, from "Where in the World is Muncie, Indiana?"

Lesson Title: "Remembering All We Have Learned"

1. Lesson Objectives:

   A. The students will be able to correctly identify and label the parts of a map:

      - Cardinal directions
      - Compass rose
      - Legend
      - Scale

   B. The students will be able to show by making a relief map that they can apply the idea of scale and proportion.

   C. The students will be able to state types of maps and what purposes these maps serve. This objective is accumulative from all four other lessons the students have had.

2. Materials:

   Teacher-provided:

   - Four to five ready-made maps of Indiana for children, paper, ledger-sized, and laminated
   - Modeling clay
   - Tools: pencils, pen caps, cups, etc.
   - Ruler (for proportion and scale)
   - Prepared overhead or chart with list of needed elements for map
   - Overhead

- Overhead markers (one for teacher and one for each group)

Student-provided:

- Paper for students on which to write
- Pencils for students with which to write

3. Procedures:

A. Introduction:

Have maps pulled down so they can be seen. Also have a map on the overhead of Indiana.

"Some people make maps as a career choice. We are going to have an exciting opportunity to join their field today. We have learned quite a bit about maps and many map skills. Today, we will put that to use. We will also be working in groups, so we need to remember to cooperate."

B. Body:

1. To show the students' comprehension at all levels of Bloom's Taxonomy, children are to build a relief map of Indiana (Kim Craig, EDEL 360 student, 2000). This should show the following things about each student's understanding of mapmaking and geography:
   - Knowledge—can define, identify, and locate the material taught in these five lessons
   - Comprehension—can describe, explain, and interpret the material
   - Application—can apply the knowledge and comprehension and construct a model of a map
   - Analysis—can infer, categorize, diagram, and compare material

- Synthesis—can combine knowledge and construct a product from material
- Evaluation—can decide what is to be utilized in the group's map, evaluate the lesson, and give one's opinion (from EDEL 360 Course Handbook, Alexander, Sp. 2000)

2. The basic shape of Indiana with county lines will be given. The groups will be given fifteen to twenty minutes to construct maps using modeling clay, tools (pencils, pen caps, fingers, cups, etc.), and overhead markers. A ruler will be given to each group for accuracy of proportion and scale. Each person must participate. The map must include (providing time):
   - Cardinal directions in the margins
   - Compass rose in the margins
   - Legend or key
   - Map scale, which I will tell them one measurement they may use to figure this
   - Correct proportions
   - At least one natural land feature, which may include:

     A specific river

     The difference between the flatter northern part of the state and the less flat Southern part of the state

     The caves in Southern Indiana

     Lakes in or around Indiana

- At least four cities and/or towns, including:

  Muncie

  Indianapolis, our state capital

  Two additional cities and/or towns

- There will be a map available to them, but they are not to copy. This map will be the one in the front of the class (pull-down map).

3. Each student will write one paragraph describing the parts of a map we discussed and taught in class:

   - Cardinal directions
   - Compass rose
   - Legend or key
   - Scale
   - Proportion
   - How to use a map
   - Different types of maps

   Each student will include how he/she felt to be a contributor in the group's work, his/her favorite part in the lesson, and why that part was the favorite part.

C. Closing:

1. Review the parts of a map we discussed and the different types of maps. Have students name and define them.
2. Have students do evaluation in class.
3. Collect materials. Students will clean their own areas.

5. Evaluation:

A. The students will be able to correctly identify and label parts of a map:

1. Cardinal direction
2. Compass rose
3. Legend or key
4. Scale

B. The children will be able to show, by making a relief map, that they can apply the idea of proportion to a map.

C. The students will be able to state type of maps and what purposes these maps serve. This objective is accumulative. Its objective is to recall and use information from the other four lessons.

D. The students will show their understanding cooperatively by the map and individually by the paragraph explaining:

- Cardinal directions
- Compass rose
- Legend or key
- Scale
- Proportion
- How to use a map
- Different types of maps—relief, political, and physical

Each student will also include how he/she felt to be a contributor in the group's work, his/her favorite part in the lesson, and why that part was his/her favorite part of the activity.

The map must include:

- Cardinal directions in the margins
- Compass rose in the margins
- Legend or key
- Map scale, which I will tell them one measurement they may use to figure this
- Correct proportions
- At least one natural land feature, which may include:
    - A specific river
    - The difference between the flatter Northern part of the state and the less flat Southern part of the state
    - Lakes in or around Indiana
- At least four cities and/or towns, including:
    - Muncie
    - Indianapolis, our state capital
    - Two additional cities and/or towns

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    - Indianapolis, our state capital
    - Two additional cities and/or towns

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